

Attorney Docket No. 00280758AA

Application Serial No.: 10/749,518

**REMARKS****RECEIVED  
CENTRAL FAX CENTER****OCT 02 2006**

New claims 23-48 are the only active claims pending in this application. Claims 1-22 are canceled. The foregoing separate sheets marked as "Listing of Claims" shows all the claims in the application, each with an indication at its first line showing the claim's current status.

**I. Objections to the Drawings**

The Office Action objects to the originally filed drawings, on the stated reason that "they include the following reference character(s) not mentioned in the description: 28." Office Action, at page 2.

Applicant respectfully responds that the original specification mis-typed the reference number "28" and that the correction by amendment above obviates this objection to the drawings. Stated with greater specificity, the originally filed specification, in its description of the block labeled as "28" in Figure 2 (see page 7, line 20), had typographical error that mistyped "28" as 27." The amendment above corrects the error. Applicant respectfully submits that the amendment is for form and does not add new matter. Applicant respectfully submits, in support, that the description surrounding the mistype conforms to the description appearing in the functional block "28" in Figure 2. Therefore a person of ordinary skill in the art would readily understand that "27" at line 20 of page 7 was intended to read "28." *Compare*, specification, at page 7, lines 18-21 ("The selectively sampled and stored data is returned to step 25, after which, in step [28], the learning algorithm A is run on data T'") to Figure 2, functional blocks 24, 25 and 28.

Applicant respectfully requests, for the foregoing reasons, that that the Office Action's objections to the drawings be reconsidered and withdrawn.

**II. Objections to Claim Form**

Applicant respectfully submits that all of the claims the Office Action objects to, namely claims 1, 2, 5-7 and 11, are canceled, thereby rendering the objections moot. Applicant also respectfully submits that each of the new claims (no. 23-46)

Attorney Docket No. 00280758AA

Application Serial No.: 10/749,518

meet all form requirements of 35 U.S.C. § 112, second paragraph, and all relevant guidelines for claim form stated by the MPEP.

### III. Rejections Based on Prior Art

The Office Action rejects the original claims 1-17, which are now canceled, under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. US 2003/004902 A1 ("Yamanishi") in view of U.S. Patent No. 6,519,604 ("Acharya"). See Office Action at pages 5-9.

Applicant will address the Office Action's stated bases for these rejections, in reference to new base claims 23 and 36, and show that the combined disclosures of Yamanishi and Acharya fail to establish *prima facie* obviousness of either these new claims within the meaning of 35 U.S.C. § 103.

Claim 19 covers Applicant's novel method for detecting statistical outliers by constructing a classifier, as opposed to density estimation, using a novel unsupervised learning that iteratively selects samples that are "hard to classifier." This accelerates and improves the learning process, and reduces computational burden. Further, Applicant's novel method, as recited by claim 19, further includes conducting the unsupervised learning with a starting universe of samples being a combination of detected samples and internally synthesized samples. Applicant's novel method constructs the classifier as a set of  $t$  classifiers, termed  $h_i$  in the specification. Applicant's novel method constructs the set of  $t$  classifiers, i.e.,  $h_i$ , for  $i=1$  to  $t$ , by a novel iteration scheme of  $t$  iterations, each iteration selecting only such samples as a "hard to classify" when applying the aggregate of the previously constructed classifiers, and then using these "hard to classify" samples to construct another classifier. As described in Applicant's specification, selective sampling of only the samples that are "hard to classify ... has the effect of weeding out synthesized positive examples that are 'unrealistic' and too easy to classify," both to reduce the number of samples, and because such "unrealistic" samples "do not help on identification of outliers in future test data." Specification, at page 6, lines 22-24.

Attorney Docket No. 00280758AA

Application Serial No.: 10/749,518

Referring to Applicant's claim 19, the claimed method includes "generating a set of classifiers, each member of said set being a procedure or a representation for a function classifying an operand data as an outlier or a non-outlier." Yamanishi discloses nothing within the meaning of, or that is or equivalent to this claim 19 generating a set of classifiers." Yamanishi in fact has nothing to do with providing an outlier detection function. Yamanishi relates to a method transforms a given outlier detection method (which does not necessarily output comprehensible rules) into one that can output a set of rules, by utilizing the outlierness scores given by the input outlier detection method as the labels in classification. Acharya relates to a method for answering database queries; the purpose of sampling used in Acharya's method is to faithfully reproduce the same distribution of the data in the database, using a smaller number of data. As a result, Acharya's proposed type of sampling is based upon uniform distribution, paying special attention to the high dimensional nature of databases.

Claim 19 recites the "generating a set of classifiers" as including iterations of "selectively sampling said candidate sample data to form a learning data set, said selectively sampling including applying said set of classifiers to" the samples and "generating a corresponding set of classification results." Claim 19, at lines 16-19.

Neither Yamanishi nor Acharya teach, disclose or suggest anything of this claim 19 "selectively sampling" or the "applying said set of classifiers to" the samples and "generating a corresponding set of classification results."

Claim 19's "generating a set of classifiers" includes "calculating a sampling probability value for each of said candidate sample data based, at least in part, on the corresponding set of classification results." Claim 19, at lines 20-22.

These acts or features are nowhere found in the Yamanishi or Acharya references, viewed alone or in combination.

Claim 19 recites the "generating a set of classifiers" as including: "sampling from said candidate data to form said learning data set based, at least in part, on said sampling probability values", and that "generating another classifier based on said learning data set." Claim 19, lines 23-27. Yamanishi and Acharya teach nothing of these claim 19 acts of "selective sampling" and "generating another classifier

Attorney Docket No. 00280758AA

Application Serial No.: 10/749,518

based on" the selectively sampled "learning set," and teach nothing of any structure capable of performing these acts.

Claim 19 further recites "updating said set of classifiers to include said another classifier," "repeating said selectively sampling, said generating another classifier, and said updating until said set of classifiers includes at least  $t$  members." Claim 19, at lines 30-34. These acts or features are not found, disclosed, taught or suggested anywhere in the Yamanishi or Acharya references, viewed alone or in any combination.

Applicant's claim 19 further recites "generating an outlier detection algorithm based, at least in part, on at least one of said another classifiers, for classifying a datum as being an outlier or a non-outlier." Claim 19, at lines 35-37. None of these recited acts and features are disclosed, taught or suggested anywhere in the Yamanishi or Acharya references, viewed alone or in any combination.

Applicants respectfully submit that, for at least the foregoing reasons, Yamanishi and Acharya cannot establish *prima facie* obviousness of new base 19.

Regarding Applicant's new base claim 36, Applicant respectfully submits that this claim includes limitations substantially identical to, or equivalent to, all of the above-identified limitations of claim 19. Applicant therefore respectfully submits that new claim 36 is patentable over the combined disclosures of Yamanishi and Acharya for substantially the same reasons that claim 19 is patentable over these references.

Regarding new claims 24-35, and new claims 37-48, these are dependent claims, dependent on claims 23 and 36, respectively. Claims 24-35 therefore include all limitations of claim 23, and claims 37-48 include all limitations of claim 36. Therefore, for at least the reasons Applicants respectfully presented above with respect base claims 23 and 36, new claims 24-35 and 37-48 are patentable over the combined teachings of Yamanishi and Acharya.

#### IV. Conclusion

In view of the foregoing, Applicant respectfully requests that the application be reconsidered, that claims 23-48 be allowed, and that the application be passed to issue.

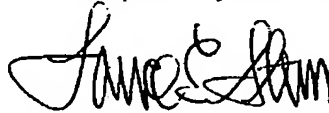
Attorney Docket No. 00280758AA

Application Serial No.: 10/749,518

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

Please charge any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041.

Respectfully submitted,



Laurence E. Stein  
Reg. No. 35,371

Whitham, Curtis, Christofferson and Cook, P.C.  
11491 Sunset Hills Road, Suite 340  
Reston, VA 20190

Tel. (703) 787-9400  
Fax. (703) 787-7557

Customer No.: 30743